

REMARKS

The objection to the specification has been obviated by revising the specification to more accurately describe the relationship between the diameter of the holes in the foam, and the average diameter of the foam cells (which are referred to as “foams” in the specification). However, before the specific wording of these revisions is discussed, a brief recap of the invention will be made so that context of these revisions may be fully appreciated.

As the Examiner appreciates in the paragraph bridging pages 2 and 3 of the last Office Action, this invention is an improvement of an open cell structured foam. As set forth in Wikipedia, under the topic “foam”, such open cell structured foams “contain **pores** that are connected to each other and form an interconnected network.” A printout of this definition is attached for the Examiner’s convenience. In the present specification, the term “holes” is used in lieu of “pores”, and page 10, lines 11-13, describes the foam cells 3 of the invention as being:

“communicated so as to form a network by unillustrated continuous holes whose diameter is smaller than that of the space volume of the foams 3.”

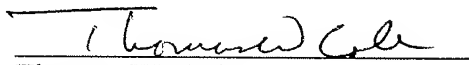
Despite the comparison of a linear dimension to a three-dimensional volume, applicants submit that any person of skill in the art would conclude from the aforementioned definition and description the simple fact that the pores or holes **are smaller in diameter than the average diameter** of the foam cells. This conclusion is further supported by the microphotographs of a polishing sheet embodying the invention shown in Figures 6-8 wherein the foam **cells** are very clear, but the pores or holes between them imperceptibly reside somewhere in the grainy texture between the foam cells. Finally, applicants would again submit that if the holes or pores were equal to or greater in average diameter than the foam cells, there could be **no distinction** between the foam cells 3 shown in the drawing and the pores or holes, as the cells 3 would be subsumed within the holes, which is clearly not indicated in the drawings.

Accordingly, the specification has been amended to reflect the understanding that a person of ordinary skill in the art would have of the previously-quoted phrase that erroneously compares a linear dimension to a volume. Specifically, the previously quoted phrase (which appears in paragraphs 8, 13, 14, 16, 27 and 42 and the "Abstract") has been amended to recite that the foam cells 3 communicate "by unillustrated continuous holes whose diameter is smaller than that of an average diameter of the foams 3." Such an amendment is inherently fully supported by the aforementioned portions of the specification, drawings and microphotographs of the invention, as the diameter of the holes or pores **must necessarily be smaller** than the average diameter of the foam cells for there to be any distinction between the foam cells 3 and the unillustrated holes or pores.

Claim 1 has been amended consistent with the amendment to the specification. Now that the Sec. 112 rejections to the specification and claims have been overcome, applicants submit that the claims are allowable over the prior art of record for all the reasons set forth in the "Remarks" in the amendment submitted on February 12, 2007.

Respectfully submitted,

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Foam

From Wikipedia, the free encyclopedia

The most general definition of **foam** is a substance that is formed by trapping many gas bubbles in a liquid or solid. It can also refer to anything that is analogous to such a phenomenon, such as quantum foam. Often people mean polyurethane foam (foam rubber), Styrofoam or some other manufactured foam when they are using the term. It can be considered a type of colloid.

From the early 20th century, various types of specially manufactured solid foams came into use. The low density of these foams made them excellent as thermal insulators and flotation devices, and their lightness and compressibility made them ideal as packing materials and stuffings. Some liquid foams, called fire retardant foams, found use in extinguishing fires, especially oil fires.

Foam, in this case meaning "bubbly liquid", is also produced as an often unwanted by-product in the manufacture of various substances. For example, foam is a serious problem in the chemical industry, especially for biochemical processes. Many biological substances, for example proteins, easily create foam on agitation and/or aeration. Foam is a problem because it alters the liquid flow and blocks oxygen transfer from air (therefore preventing microbial respiration in fermentation processes). For this reason, anti-foaming agent compounds, like silicone oils, are added to prevent these problems.

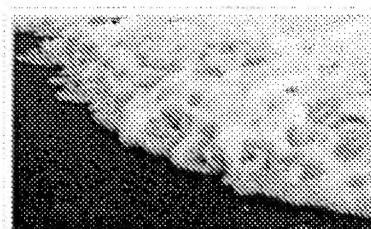
If foaming is desired, a foaming agent may help.

Foaming around the mouth can be a symptom of rabies in animals. The term sea foam is used to describe the foam that forms on top of seawater from the action of waves. In some ways, leavened bread is a foam, as the yeast causes the bread to rise by producing tiny bubbles of gas in the dough.

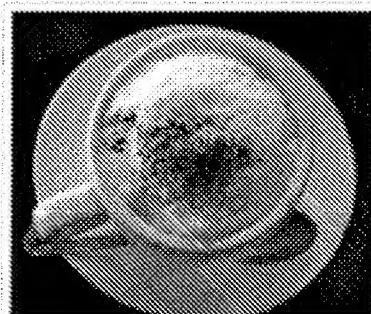
Structure of foams

Real-life foams are typically disordered and have a variety of bubble sizes. The study of idealised foams is closely linked to the mathematical problems of space-filling and minimal surfaces. The Weaire-Phelan structure is believed to be the best possible (optimal) unit cell of a perfectly ordered foam, while Plateau's laws describe how the soap-films form structures in foams.

Solid foams form an important class of lightweight cellular engineering materials. These foams can be classified into two types based on their



Sea foam on the beach



Foam on a cappuccino



Fire-retardant, **foamed plastic** being used as a temporary dam for firestop mortar in a cable

pore structure. The first type of foams are called open cell structured foams. These foams contain pores that are connected to each other and form an interconnected network. The second type of foams do not have interconnected pores and are called closed cell foams. Normally the closed cell foams have higher compressive strength due to their structures. A special class of closed cell foams is known as syntactic foam, which contains hollow particles embedded in a matrix material.

penetration in a pulp and paper mill on Vancouver Island, British Columbia, Canada.

The closed cell structure foams have higher dimensional stability, low moisture absorption coefficient and higher strength compared to open cell structured foams. All types of foams are widely used as core material in sandwich structured composite materials.

See also

- Beijing National Aquatics Centre
- Bubble

External links

- Beer foam
- Aqueous foam technology
- The strange physics of foam

Retrieved from "<http://en.wikipedia.org/wiki/Foam>"

Category: Chemical processes

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